

CLAIMS:

We claim:

- 1 1. A method of preparing a sterilizing solution, comprising:
2 (a) storing dry solid material comprising one or more dipercarboxylic acid; and
3 (b) dissolving the dry solid material into water as needed to prepare an aqueous sterilizing
4 solution having a dipercarboxylic acid concentration between about 0.1 weight percent and
5 saturation.
- 1 2. The method of claim 1, wherein the solid material further comprises inorganic salts.
- 1 3. The method of claim 2, wherein the inorganic salts are provided in a stabilizing amount.
- 1 4. The method of claim 1, wherein the solid material is substantially free from organic
2 compounds other than the one or more dipercarboxylic acid.
- 1 5. The method of claim 1, wherein the one or more dipercarboxylic acid is soluble in water
2 in the absence of a solubilizer.
- 1 6. The method of claim 1, wherein the sterilizing solution is substantially free of hydrogen
2 peroxide.
- 1 7. The method of claim 1, wherein the one or more dipercarboxylic acid is selected from
2 diperglutaric acid, diperadipic acid, diperpimelic acid, dipersuberic acid, and diperazelaic acid,
3 and combinations thereof.
- 1 8. The method of claim 1, wherein the amount of solid material dissolved into water is
2 sufficient to be sporicidal.

- 1 9. The method of claim 1, wherein the amount of solid material dissolved into water is
2 sufficient to be sterilizing.
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- 1 10. The method of claim 1, wherein the water is at ambient temperature.
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- 1 11. The disinfecting solution formed by the method of claim 1.
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- 1 12. The method of claim 1, further comprising:
2 (c) synthesizing one or more dipercarboxylic acid; and
3 (d) isolating the one or more dipercarboxylic acid form.
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- 1 13. The method of claim 1, further comprising:
2 (c) dissolving one or more dicarboxylic acid in sulfuric acid;
3 (d) reacting the dicarboxylic acid with hydrogen peroxide to form dipercarboxylic acid;
4 (e) adding ammonium sulfate to precipitate the dipercarboxylic acid;
5 (f) washing the dipercarboxylic acid to remove sulfuric acid; and
6 (g) drying the dipercarboxylic acid.
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- 1 14. The method of claim 13, further comprising:
2 (h) dissolving the dry dipercarboxylic acid in ethanol; and
3 (i) recrystallizing the dipercarboxylic acid by gradual addition of water; and
4 (j) filtering and drying the recrystallized dipercarboxylic acid to obtain solid particles of
5 the dipercarboxylic acid.
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- 1 15. The method of claim 13, wherein the ratio of hydrogen peroxide to dicarboxylic acid is
2 about 4.
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- 1 16. The method of claim 13, further comprising
2 (h) maintaining the reaction temperature between 0 and 20°C.
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1 17. The method of claim 1, wherein the dry solid material further comprises one or more
2 organic solubilizers selected from long chain aliphatic fatty acids, long chain aliphatic quaternary
3 ammonium salts, and combinations thereof.

1 18. A composition consisting of solid material that comprise one or more dipercarboxylic
2 acid that is solid at room temperature and soluble at sterilizing concentrations in water.

1 19. The composition of claim 18, wherein the particles form a powder.

1 20. The composition of claim 18, wherein the one or more dipercarboxylic acid is selected
2 from diperglutaric acid, diperadipic acid, diperpimelic acid, dipersuberic acid, and diperazelaic
3 acid, and combinations thereof.

1 21. The method of claim 18, wherein the solid particles further comprise inorganic salts.

1 22. The method of claim 18, wherein the particles further comprise a dipercarboxylic acid-
2 stabilizing amount of inorganic salts.

1 23. The method of claim 18, wherein the solid particles are substantially free from organic
2 compounds other than the one or more dipercarboxylic acid.

1 24. The method of claim 18, wherein the one or more dipercarboxylic acid is soluble in water
2 in the absence of a solubilizer.

1 25. The method of claim 22, wherein the inorganic salts are selected from sodium sulfate,
2 magnesium sulfate, hydrated alkali metal salts, alkaline earth metal salts, and combinations
3 thereof.